

Notice of Allowability

Application No.

10/698,909

Examiner

Said Broome

Applicant(s)

WANG ET AL.

Art Unit

2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 10/2/2006.
2. ☒ The allowed claim(s) is/are 1-26.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>10/23/2006</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

Drawings

The drawings were received on 10/2/2006. These drawings are accepted by the Examiner.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Todd Fronek on December 11, 2006.

Amend claims 1-9, 13, 14, 16, 19 and 23 as follows:

1. A computer implemented method for generating a representation of structure for use in rendering a synthesized image, comprising:

~~establishing a selected viewing direction for the structure;~~

determining distances from a reference surface to the structure ~~for a plurality of points on the structure, the distances being a function of the selected viewing direction~~ at a plurality of points on the reference surface associated with the structure storing a plurality of distances from the reference structure to the structure as a representation, wherein each distance is a function of viewing direction; and

~~storing the distances as a representation; and~~

rendering an image based on the representation.

2. The method of claim 1 wherein ~~the steps of establishing a selected viewing direction and determining the plurality of distances from the reference surface to the structure are performed each for a plurality of selected viewing directions.~~

3. The method of claim 2 wherein determining the plurality of distances includes determining distances with respect to a reference surface having a curvature.
4. The method of claim 3 wherein determining the plurality of distances includes calculating distances for a plurality of selected viewing directions uniformly distributed over a selected range and with respect to a reference surface of zero curvature.
5. The method of claim 4 wherein determining the plurality of distances for a reference surface of selected curvature comprises interpolating distances obtained for the reference surface of zero curvature.
6. The method of claim 1 wherein determining distances includes determining if a finite distance exists along the ~~selected~~ viewing direction, and wherein storing the representation includes storing the finite distances, and if a finite distance to the structure does not exist for a portion of the reference surface, storing an indication in the representation that such a finite, distance does not exist for the portion from the reference surface to the structure along the ~~selected~~ viewing direction.
7. The method of claim 1 wherein determining the plurality of distances includes determining distances as being substantially parallel to the viewing direction.
8. The method of claim 1 wherein determining the plurality of distances includes determining distances as being a function of an angle of the viewing direction with respect to the preference surface.
9. The method of claim 1 wherein determining the plurality of distances includes determining distances with respect to a reference surface having a curvature.

13. The method of claim 1 wherein determining the plurality of distances includes accessing information of height distribution of the structure with zero curvature.

14. The method of claim 1 wherein storing the plurality of distances as a representation includes decomposing the representation as two lower dimensional representations.

16. The method of claim 15 wherein determining the plurality of distances includes determining if a finite distance exists along the ~~selected~~ viewing direction, and wherein storing, the representation includes storing the finite distances, and if a finite distance to the structure from the reference surface does not exist for a portion of the reference surface along the ~~selected~~ view direction, storing the corresponding distance of a maximum viewing direction having a finite distance.

19. A computer implemented method for rendering a synthesized image, comprising:
establishing a surface geometry of a structure to be synthesized;
identifying a plurality of points on the surface geometry;
establishing, for each point of the plurality of points, parameters related to a surface texture to be synthesized at the point, a synthesized viewing direction and a synthesized illumination direction; and
using a representation of each distances from a reference surface to a sample structure to modify characteristics of ~~the each point when rendered~~ to render an image based on the modified characteristics, the wherein each distances being is a function of a ~~selected~~ viewing direction.

23. The method of claim 19 wherein the representation includes finite distances from a reference surface to the, sample structure along the ~~selected~~ viewing direction, and if a finite distance from the, reference surface to the sample structure does not exist for a portion of the reference surface, an indication that such a finite distance does not exist for the portion from the

reference surface to the structure along the ~~selected~~ viewing direction, and wherein using the representation includes rendering the point if a finite distance exists and not rendering the point if a finite distance does not exist.

Allowable Subject Matter

Claims 1-26 are allowed. The following is an examiner's statement of reasons for allowance:

The authors of the reference, Wang et al. ("View-Dependent Displacement Mapping"), submitted a declaration under 37 C.F.R. 1.132 to show that the work of the reference is the work of the applicants of the current application. Therefore the 35 U.S.C. 102(a) rejection of claims 1-26 using the Wang et al. reference has been withdrawn, and claims 1-26 are allowed.

Conclusion

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Said Broome whose telephone number is (571)272-2931. The examiner can normally be reached on 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571)272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S. Broome *SB*
12/11/06

Ulka Chauhan
ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER